

**CLAIMS**

**What is claimed is:**

1. A method for detecting non-obstructive apnea within a patient using an implantable medical system, the method comprising the steps of:
  - monitoring blood pressure; and
  - detecting non-obstructive apnea within the patient based on changes in blood pressure.
2. The method of claim 1 wherein the step of monitoring blood pressure is performed to monitor diastolic pressure.
3. The method of claim 1 wherein the step of monitoring blood pressure is performed using an implantable pressure sensor.
4. The method of claim 1 wherein the step of detecting non-obstructive apnea within the patient based on changes in blood pressure includes the steps of:
  - tracking changes in blood pressure from beat to beat;
  - identifying a period of time having a substantially uniform decrease in blood pressure from beat to beat; and
  - associating non-obstructive apnea with the period of time having the substantially uniform decrease in the blood pressure from beat to beat.
5. The method of claim 1 wherein the step of detecting non-obstructive apnea within the patient based on changes in blood pressure includes the steps of:
  - evaluating BP(n) wherein BP(n) is the blood pressure of a heartbeat "n" for a plurality of beats;

calculating  $\Delta BP(n) = BP(n) - BP(n-1)$  for the plurality of beats;  
calculating  $\Delta \Delta BP = \Delta BP(n) - \Delta BP(n-1)$  for the plurality of beats; and  
identifying a period of time wherein  $\Delta BP(n) < 0$  and  $|\Delta \Delta BP|$  is less  
than a predetermined rate-based threshold value; and  
determining whether the period of time exceeds a predetermined  
time-based threshold value and, if so, generating a signal  
indicative of the onset of non-obstructive apnea.

6. The method of claim 5 wherein the time-based threshold value is in the range of ten to fifteen seconds.

7. The method of claim 5 wherein the time-based threshold value is ten seconds.

8. The method of claim 1 further including the step of detecting patient motion of the type associated with respiration and wherein the step of detecting non-obstructive apnea based on changes in blood pressure is performed only if there is substantially no motion of the type associated with respiration.

9. The method of claim 8 wherein the system includes an accelerometer and wherein the patient motion is detected using the accelerometer.

10. The method of claim 1 further including the step of delivering apnea therapy in response to the detection of non-obstructive apnea.

11. The method of claim 10 wherein the step of delivering apnea therapy includes the step of delivering overdrive pacing therapy to the heart of the patient.

12. The method of claim 11 wherein the overdrive pacing therapy is dynamic atrial overdrive (DAO) pacing therapy.

13. The method of claim 10 for use with a system having an implantable drug pump and wherein the step of delivering apnea therapy includes the step of selectively delivering drug therapy to the patient using the drug pump.

14. The method of claim 10 for use with a system having an implantable phrenic nerve stimulator and wherein the step of delivering apnea therapy includes the step of delivery of diaphragmatic pacing to the phrenic nerves using the phrenic nerve stimulator.

15. The method of claim 1 further including the step of generating a warning signal in response to non-obstructive apnea sufficient to alert the patient.

16. The method of claim 15 wherein the step of generating a warning signal includes one or more of: transmitting a signal to an external alarm device; electrically stimulating selected muscles of the patient to cause the muscles to twitch using an implantable electrical stimulator; or controlling an implantable vibration device to vibrate.

17. The method of claim 1 further including the step of recording diagnostic information representative of detection of apnea.

18. A system for detecting non-obstructive apnea within a patient using implantable medical components, the system comprising:  
a blood pressure detector; and  
a blood pressure-based non-obstructive apnea detector operative to detect non-obstructive apnea within the patient based on changes in blood pressure.

19. A system for detecting and treating non-obstructive apnea within a patient using implantable medical components, the system comprising:

- a blood pressure-based non-obstructive apnea detector operative to detect non-obstructive apnea within the patient based on changes in blood pressure; and
- an apnea treatment system operative in response to detection of non-obstructive apnea to deliver therapy.

20. The system of claim 19 wherein the apnea treatment system includes a diaphragmatic pacing system operative to deliver diaphragmatic pacing.

21. The system of claim 19 wherein the apnea treatment system includes an overdrive pacing system operative to deliver overdrive pacing to the heart of the patient.

22. A system for detecting non-obstructive apnea within a patient using implantable medical components, the system comprising:

- means for detecting blood pressure;
- means for tracking changes in blood pressure;
- means for identifying a period of time having a substantially uniform decrease in blood pressure; and
- means for associating non-obstructive apnea with the period of time having the substantially uniform decrease in the blood pressure.